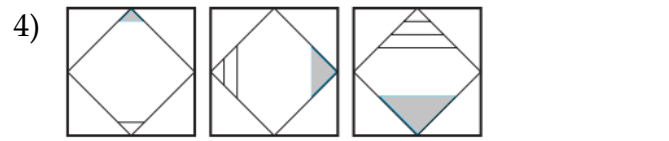
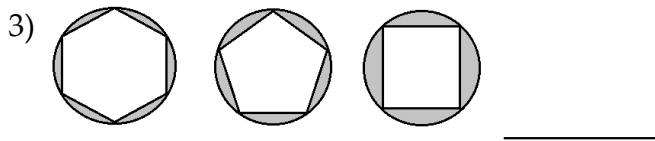
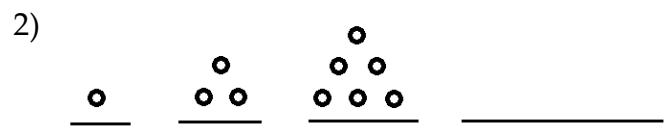
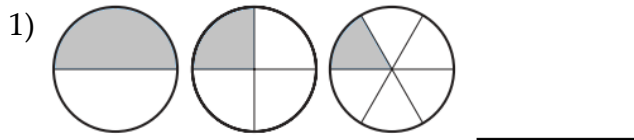


# WORKSHEET 2.2 – Inductive & Deductive Reasoning



Name: \_\_\_\_\_ Hour: \_\_\_\_\_ Date: \_\_\_\_\_

## SECTION 1: Sketch the next figure in the pattern.



## SECTION 2: Predict the next number in the sequence. Describe the pattern.

5) 10, 5, 2.5, 1.25, \_\_\_\_\_. Pattern: \_\_\_\_\_

6) 1, 3, 7, 13, \_\_\_\_\_. Pattern: \_\_\_\_\_

7) 2, -6, 18, -54, \_\_\_\_\_. Pattern: \_\_\_\_\_

8) 65,536; 256; 16; 4; \_\_\_\_\_. Pattern: \_\_\_\_\_

## SECTION 3: Explore the pattern. Write a conjecture based on what you observe.

9) 12 is divisible by 3 and  $(1 + 2)$  is divisible by 3.

27 is divisible by 3 and  $(2 + 7)$  is divisible by 3.

84 is divisible by 3 and  $(8 + 4)$  is divisible by 3.

123 is divisible by 3 and  $(1 + 2 + 3)$  is divisible by 3.

**CONJECTURE:**

## SECTION 4: Show each conjecture is false by providing a counterexample.

10) All prime numbers are odd.

\_\_\_\_\_

11) If the product of two numbers is positive, then the two numbers must be positive.

\_\_\_\_\_

12) The square root of a number  $x$  is always less than  $x$ .

\_\_\_\_\_

**SECTION 5:** Decide if each person is using inductive or deductive reasoning.

13) Emily knows that snickerdoodles bake for less time than cupcakes. She also knows that cupcakes bake for less time than a cheesecake, so she reasons that snickerdoodles must bake for less time than a cheesecake.

14) Clara knows that Jeff always gets good grades in their history class. Every other history student scores below Jeff. Zach is new to their history class. Clara reasons that Jeff will get better grades than Zach.

15) Ms. Z has assigned homework to her Algebra 1 class every day this week. Today is Thursday. Bella assumes that she will receive Algebra homework in Ms. Z's class today.

16) If you are a student at KNHS who wants to be in Student Council, you must have 25 of your peers sign a petition in order to become a member. Kate is a KNHS student who is a member of Student Council. Therefore, she had 25 of her peers sign a petition.

**SECTION 6:** Decide if each argument is valid based on the Law of Detachment.

17) Stanley knows that if he drinks espresso before bedtime, then he will be up all night. Stanley has been up all night. Therefore, he must have drunk an espresso before bedtime.

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18) If two angles are vertical angles, then they are congruent.  $\angle X$  and  $\angle Y$  are vertical angles. Therefore, they must be congruent.

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**SECTION 7:** Use the Law of Syllogism to write the statement that follows from the pair of statements.

19) If Erin studies for the test, then she will get an A. If she gets an A on the test, then her mom will give her a Ferrari.

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20) If Hailey goes to Florida, she will spend the day at the beach. If she spends the day at the beach, she will get sunburnt.

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